

Claims

1. A composition for catalyst preparation comprising:

1) a composite metal oxide as a catalytic active component; and

5 2) a catalyst additive selected from sublimable materials.

2. The composition of Claim 1, which comprises:

10 1) a catalytic component represented by the following formula 1; and

2) a catalyst additive selected from sublimable materials:

[Formula 1]



15 wherein Mo is molybdenum;

Bi is bismuth;

A is an iron element;

B is at least one element selected from the group consisting of Co and Ni;

20 C is at least one element selected from the group consisting of W, Si, Al, Zr, Ti, Cr, Ag and Sn;

D is at least one element selected from the group consisting of P, Te, As, B, Sb, Ce, Nb, Pb, Mn, Zn and Nb;

25 E is at least one element selected from the group consisting of Na, K, Li, Rb, Cs, Ta, Ca and Mg;

a, b, c, d, e, f and g represent the atomic ratio of the respective elements, and

30 when a is 12, b is then 0.01-10, c is 0.01-10, d is 0.01-10, e is 0.01-10, f is 0.01-20 and g is 0.01-10, and h is a numeral value depending on the oxidation state of each

of the elements.

3. The composition of Claim 1 or 2, wherein the catalyst additive is at least one selected from the group consisting of urea (NH_2CONH_2), melamine ($\text{C}_3\text{H}_6\text{N}_6$), ammonium oxalate ($\text{C}_2\text{H}_8\text{N}_2\text{O}_4$), methyl oxalate ($\text{C}_4\text{H}_6\text{O}_4$) and naphthalene (C_{10}H_8).

4. The composition of Claim 1 or 2, wherein the catalyst additive is in the form of a granular powder with a size of 0.01-10 μm or a liquid.

5. The composition of Claim 1, wherein the catalyst additive is added at the amount of 0.1-30% by weight to the weight of the catalytic active component of formula 1.

6. A method for preparing a catalyst containing a composite metal oxide as a catalytic active component, the method comprising the steps of:

a) preparing a catalyst suspension containing salt of each metal components of the composite metal oxide for the catalytic active component;

b) drying the catalyst suspension and then crushing the dried material to prepare a catalyst powder;

c) mixing the catalyst powder with a catalyst additive selected from sublimable materials; and

d) calcining the mixture from the step c).

7. The method of Claim 6, which comprises the steps of:

a) preparing a catalyst suspension containing a catalytic active component represented by the following formula 1;

b) drying the catalyst suspension and then crushing the dried material into a catalyst powder with a particle size of less than 150;

c) mixing the crushed catalyst powder with a catalyst additive selected from sublimable materials; and

d) calcining the mixture from the step c) at a temperature of 400-500 °C under an air atmosphere for at least 5 hours:

[Formula 1]



wherein Mo is molybdenum;

Bi is bismuth; A is an iron element;

B is at least one element selected from the group consisting of Co and Ni;

C is at least one element selected from the group consisting of W, Si, Al, Zr, Ti, Cr, Ag and Sn;

D is at least one element selected from the group consisting of P, Te, As, B, Sb, Ce, Nb, Pb, Mn, Zn and Nb;

E is at least one element selected from the group consisting of Na, K, Li, Rb, Cs, Ta, Ca and Mg;

a, b, c, d, e, f and g represent the atomic ratio of the respective elements, and

when a is 12, b is then 0.01-10, c is 0.01-10, d is 0.01-10, e is 0.01-10, f is 0.01-20 and g is 0.01-10, and h is a numeral value depending on the oxidation state of each of the elements.

8. The method of Claim 6 or 7, wherein the catalyst additive is at least one selected from the group consisting of urea (NH_2CONH_2), melamine ($\text{C}_3\text{H}_6\text{N}_6$), ammonium oxalate ($\text{C}_2\text{H}_8\text{N}_2\text{O}_4$), methyl oxalate ($\text{C}_4\text{H}_6\text{O}_4$) and naphthalene (C_{10}H_8).

5

9. The method of Claim 7, which further comprises, between the steps b) and c), a step of calcining the crushed catalyst powder at a temperature of 180-250 °C for 3-5 hours under an oxygen atmosphere.

10

10. The method of Claim 6 or 7, wherein the catalyst additive is in the form of a granular powder with a size of 0.01-10 μm or a liquid.

15

11. The method of Claim 7, wherein the catalyst additive is added at the amount of 0.1-30% by weight to the weight of the catalytic active component of formula 1.

20

12. A catalyst having fine pores formed by removing the catalyst additive from the composition for catalyst preparation according to any one of Claims 1 to 5 by a calcining process.